Corridor Baseline Risk Assessment

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Assignment?

- Indeed, for many risk assessment problems, the base case will not be ‘‘known’’ in a statistical sense before the work begins because **there will not have been sufficient exposure in the specific territory affected, under current or projected conditions**, **to make collision and other data representative of actual long-term performance.**

Objectives?

- The primary goal of the risk assessment required by this proposed rule is to **give an objective measure of the levels of safety risk involved for comparison purposes.** As such, FRA believes the focus of the risk assessment ought to be the **determination of relative risk levels**, rather than absolute risk levels. (page 42361)

Available Data Sources

- Historical Data Sources
  - Railroad level data on operational and accident experience
  - Location-specific data
  - System-level averages (data based upon multiple railroads and years of operation)
- Simulated Data
  - Mathematical models of operational characteristics

Problems with Historical Data

- Railroad-specific data may not include any other area that represents similar experience or operations
- Location-specific data are likely to be sparse and either over or under-represent risk
- Historical composites may include inappropriate (inapplicable) observations

CRAM method and applications in base case analysis

- CRAM currently provides 11 years of geographically located accidents.
- It also provides operational data for freight and passenger flows (for one year – a limitation) for over 90% of the network.
- Using the GIS operational segments (like those represented in ASCAP) can be identified and compared to other ‘similar’ segments, around the country.

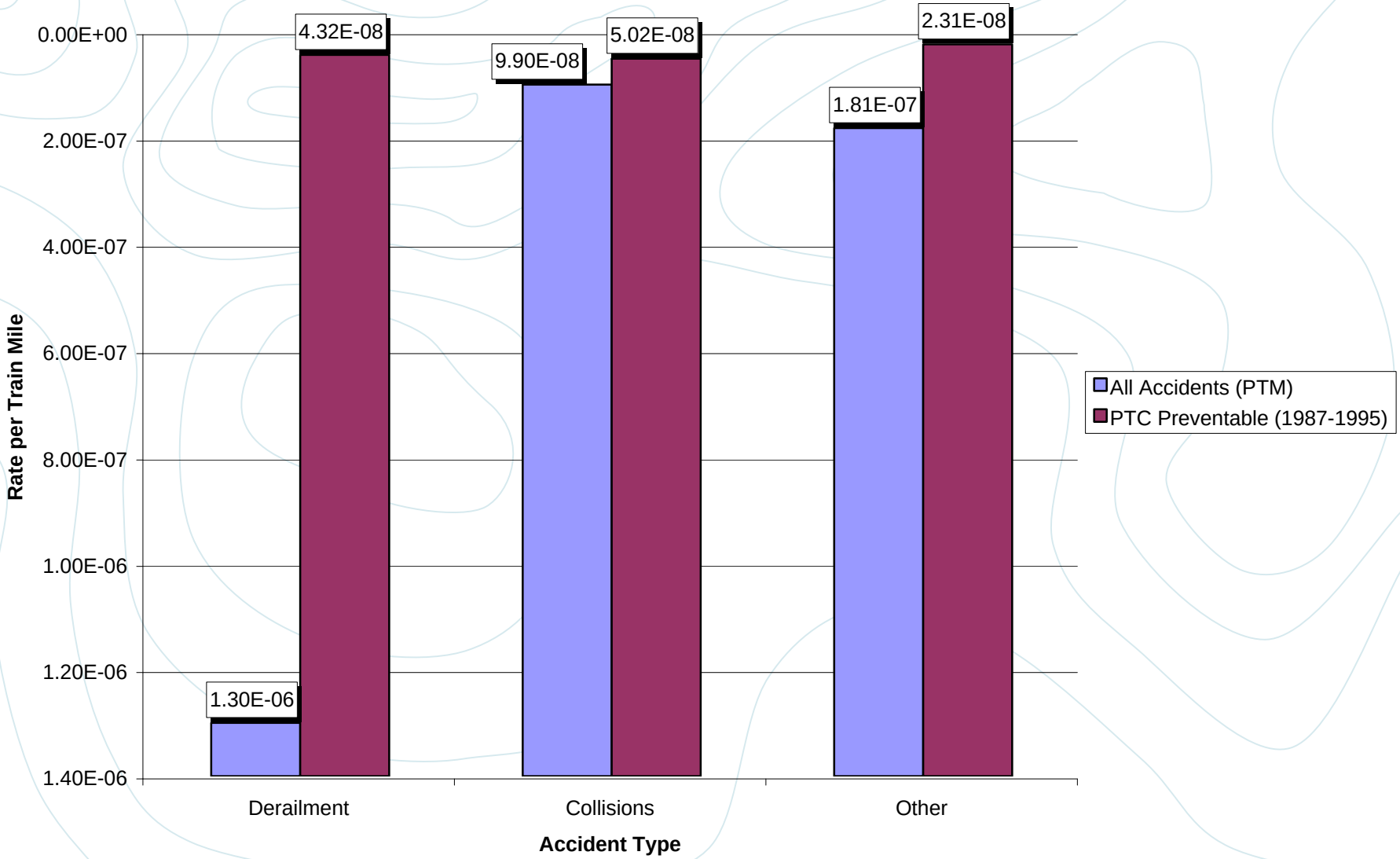
Why do it this way?

- Research in accident trends indicate that historical accident experience in one location is not alone a good predictor of future accident experience. (Ezra Hauer, 1986 " On the Estimation of The Expected Number of Accidents" ***Accident Analysis and Prevention*** Vol. 18 No.1 pp1-12 1986
- In some cases you will have operational circumstances that have never existed in that particular corridor, so you need to construct another "corridor" that looks like the one you expect to find.

Defining Acceptable Baseline Risk

- Historical Accident Rates (of all types) must be part of the baseline whether or not they are expected to be directly affected by PTC.
- Suggestion:
  - Create a long-term baseline of similar locations/operational environments and define acceptable accident rates based upon those experiences

Accident Rates (per train mile) All Accidents and PTC Preventables (LEVEL 3) Compared



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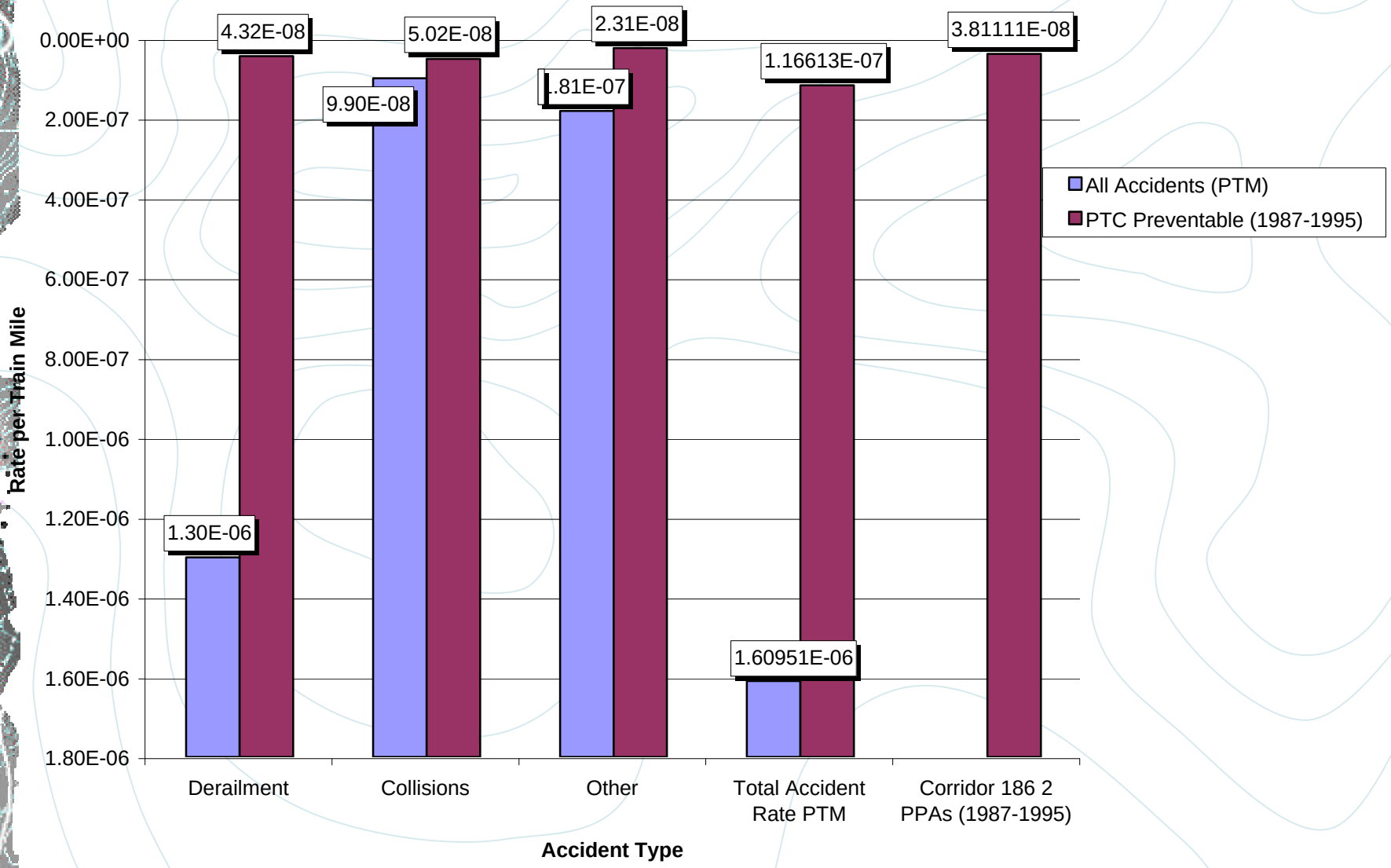

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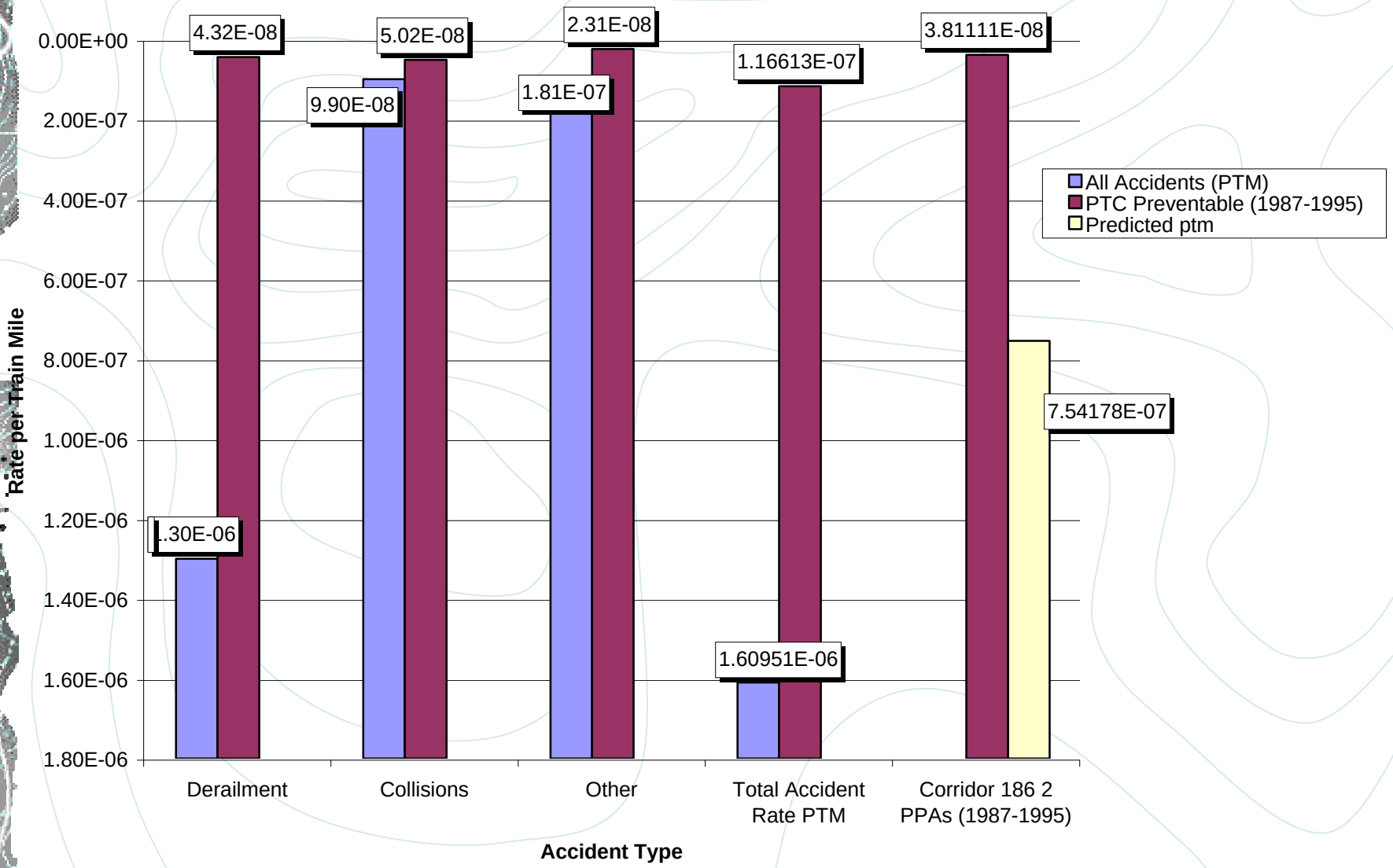

“What constitutes a baseline”

- Comparison with similar operational characteristics
- Large enough sample to be statistically reliable
- Long enough time period to reflect stability
- CRAM provides a standardized baseline by pooling a significant amount of data over time
- Can be adapted for specific corridors by selecting particular parameters (train miles, freight, hazmat, corridor characteristics) to represent corridors of interest.